

Atty. Dkt. No. 327823-1052  
*JFW*

**THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Alan J. HEEGER et al.

Title: REAGENTLESS, REUSABLE,  
BIOELECTRONIC DETECTORS  
AND THEIR USE AS  
AUTHENTICATION DEVICES

Appl. No.: 10/810,333

Filing Date: 3/25/2004

Examiner: Not Yet Assigned

Art Unit: 1634

<b>CERTIFICATE OF MAILING</b>	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below.	
<i>Rene Campos</i> (Printed Name)	
<i>Rene Campos</i> (Signature)	
11-16-04 (Date of Deposit)	

**TRANSMITTAL**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Transmitted herewith are the following:

1. First Information Disclosure Statement (3 pgs.);
2. PTO Form 1449 (2 pgs.);
3. Twenty-six (26) references as cited on PTO-1449 as **B1-B3** and **C1-C23**; and
4. Return postcard.

[ X ] The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge

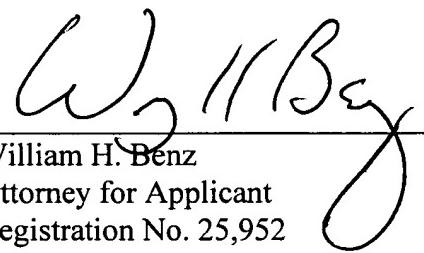
the unpaid amount to Deposit Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date Nov 15 '04

By

  
William H. Benz  
Attorney for Applicant  
Registration No. 25,952

FOLEY & LARDNER LLP  
Customer Number: 38706  
Telephone: (650) 251-1124  
Facsimile: (650) 856-3710



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Alan J. HEEGER et al.

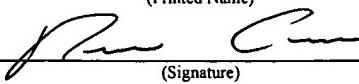
Title: REAGENTLESS, REUSABLE,  
BIOELECTRONIC DETECTORS  
AND THEIR USE AS  
AUTHENTICATION DEVICES

Appl. No.: 10/810,333

Filing Date: 3/25/2004

Examiner: Not Yet Assigned

Art Unit: 1634

<b>CERTIFICATE OF MAILING</b>	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below.	
Rene Campos	
(Printed Name)	
	
(Signature)	
11. 16. 04	
(Date of Deposit)	

**FIRST INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith on Form PTO-1449 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

**RELEVANCE OF EACH DOCUMENT**

The relevance of the foreign-language documents is described in the present specification. An English abstract of the two Chinese patents referenced as B1 and B2, (CN1422960 and CN1422961), are submitted herewith. The translation of reference B3 (WO2004/035829) is also being submitted.

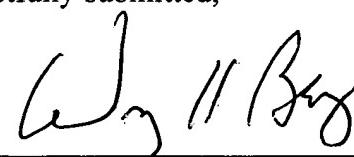
Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO-1449 be returned in accordance with MPEP §609.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872.

Respectfully submitted,

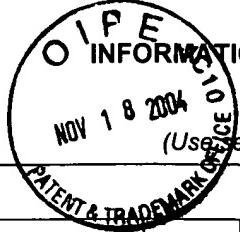
Date Nov 15, 04

By \_\_\_\_\_



William H. Benz  
Attorney for Applicant  
Registration No. 25,952

FOLEY & LARDNER LLP  
Customer Number: 38706  
Telephone: (650) 251-1124  
Facsimile: (650) 856-3710

Form PTO-1449 (MODIFIED)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. 327823-1052		SERIAL NO. 10/810, 333	
 <b>INFORMATION DISCLOSURE CITATION</b> <i>(Use several sheets if necessary)</i>		APPLICANT		Alan J. HEEGER et al.			
		FILING DATE		GROUP ART UNIT			
		3/25/2004		1634			
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
		5,139,812	8/8/1992	Lebacq, Philippe	427	7	
<b>FOREIGN PATENT DOCUMENTS</b>							
REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION	
						YES	NO
B1	CN1422960	6/11/03	China [English Abstract]				X
B2	CN1422961	6/11/2003	China [English Abstract]				X
B3	WO/04/035929	4/29/2004	Japan				X
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
C1	Kuhr, et al. „Electrochemical DNA analysis comes of age“ <i>Nature Biotech</i> 18:1042-1043 (2000)						
C2	Willner, Itamar “Biomaterials for Sensors, Fuel Cells, and Circuitry” <i>Science</i> 298:2407-2408 (2002)						
C3	Fritz, et al. “Electronic detection of DNA by its intrinsic molecular charge” <i>Proc. Natl. Acad. Sci., USA</i> 99(22):4142-14146 (2002).						
C4	Brazill, et al. “Capillary Gel Electrophoresis with Sinusoidal Voltammetric Detection: A Stratego To Allow Four-“Color” DNA Sequencing” <i>Anal Chem.</i> 73:4882-4890 (2001)						
C5	Palecek, et al. “Electrochemistry of Nucleic Acids and Development of DNA Sensors” <i>Crit. Rev. Anal. Chem.</i> 32(3):261-270 (2002)						
C6	Millan et al. “Sequence-Selective Biosensor for DNA Based on Electroactive Hybridization Indicators” <i>Anal. Chem.</i> 65:2317-2323 (1993)						
C7	Kelley, et al. “Single-base mismatch detection based on charge transduction through DNA” <i>Nucleic Acids Res.</i> 27(24):4830-4837 (1999)						
EXAMINER				DATE CONSIDERED			
<p>* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include any copy of this form with next communication to applicant.</p>							

Form PTO-1449 (MODIFIED)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	
		ATTY. DOCKET NO. 327823-1052	
		SERIAL NO. 10/810, 333	
<b>INFORMATION DISCLOSURE CITATION</b>  <i>(Use several sheets if necessary)</i>		<b>APPLICANT</b> Alan J. HEEGER et al.	
		<b>FILING DATE</b> 3/25/2004	
<b>OTHER DOCUMENTS</b> ( <i>Including Author, Title, Date, Pertinent Pages, Etc.</i> )			
C8	Ihara et al "Ferrocene-oligonucleotide conjugates fro electrochemical probing of DNA" <i>Nucleic Acids Res</i> 24(21):4273-4280 (1996)		
C9	Yu, et al. "Electronic Detection of Single-Base Mismatches in DNA with Ferrocene-Modified Probes: <i>J. Am. Chem. Soc.</i> 123:11155-11161 (2001)		
C10	Umek et al. "Electronic Detection of Nucleic Acids" <i>J. Mol. Diag.</i> 3(2):74-84 (2001)		
C11	Park et al. "Array-Based Electrical Detection of DNA with Nanoparticle Probes" <i>Science</i> 295:1503-1506 (2002)		
C12	Korri-Youssoufi, et al. "Toward Bioelectronics: Specific DNA Recognition Based on an Oligonucleotide-Functionalized Polypyrrole" <i>J. Am. Chem. Soc.</i> 119:7388-7389 (1997)		
C13	Clelland et al. "Hiding messages in DNA microdots" <i>Nature</i> 399:533-534 (1999)		
C14	Cox et al. "Bar coding objects with DNA" <i>Analyst</i> 126:545-547 (2001)		
C15	Fan et al. "Spectroscopy and Electrochemistry of the Covalent Pyridine-Cytochrome c Complex and a Pyridine-Induced, "Alkaline-like" Conformation" <i>J. Phys. Chem. I(B)</i> 106:11375-11383 (2002)		
C16	Hirst, J. et al. "Kinetics and Mechanism of Redox-Coupled, Long-Range Proton Transfer in an Iron-Sulfur Protein. Investigation by Fast-Scan Protein-Film Voltammetry" <i>J. Am. Chem. Soc.</i> 120:7085-7094 (1998)		
C17	Tyagi et al. "Molecular Beacons: Probes that Fluoresce upon Hybridization" <i>Nat. Biotechnol.</i> 14:303-308 (1996)		
C18	Boon et al. "An electrical probe of protein-DNA interactions on DNA-modified surfaces" <i>Nat. Biotechnol.</i> 20:282-286 (2002)		
C19	O'Sullivan, et al. "Aptasensors – the future of biosensing?" <i>Anal. Bioanal. Chem.</i> 372:44-48 (2002)		
C20	Robertson et al. "In vitro selection of an allosteric ribozyme that transduces analytes to amplicons" <i>Nature Biotech</i> 17:62-66 (1999)		
C21	Stojanovic et al. "Fluorescent Sensors Based on Aptamer Self-Assembly" <i>J. Am. Chem. Soc.</i> 122:11547-11548 (2000)		
C22	Cook et al. "Methylated DNA labels for marking objects: <i>Biotechnol. Lett</i> 25:89-94 (2003)		
C23	Immoos et al. "Characterization of Immobilized DNA Hairpins Containing Tethered Redox Probes" <i>Dept. of Chemistry, Duke University, P.M. Gross Laboratory, Durham, NC</i>		
<b>EXAMINER</b>		<b>DATE CONSIDERED</b>	
* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include any copy of this form with next communication to applicant.			